SEQUENCE LISTING

<110> Walke, D. Wade
Turner, C. Alexander Jr.
Friedrich, Glenn
Abuin, Alejandro
Zambrowicz, Brian
Sands, Arthur T.

<120> Novel Human Transferase Proteins and
Polynucleotides Encoding the Same

<130> LEX-0107-USA

<150> US 60/170,408
<151> 1999-12-13

<160> 37

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ggagtggagg tgatgccccc gcacacggtt cccatcccag gcctccagtt tgaaggaccc 480
gatgcccccg tctatgaggt caccctgaca gcttctctgg ggacactgaa caccccttgct 540
gatgtcccag acagtgtggt gcagggcaga ggccagaagc agctgatcat ttctaccagt 600
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<212> PRT
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Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
35 40 45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
50 55 60
Leu Phe Ser Tyr Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys
65 70 75 80
Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr
85 90 95
Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe
100 105 110
Glu His Phe Gln Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro Leu Leu
115 120 125
Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro Val His Gly Val Glu Val
130 135 140
Met Pro Leu His Thr Val Pro Ile Pro Gly Leu Gln Phe Glu Gly Pro
145 150 155 160
Asp Ala Pro Val Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly Thr Leu
165 170 175
Asn Thr Leu Ala Asp Val Pro Asp Ser Val Val Gln Gly Arg Gly Gln
180 185 190
Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys Phe Ile
195 200 205
Leu Gln His Val Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln Lys Val
210 215 220
Asp Ile Val Ser Leu Glu Ser Arg Ser Ser Val Ala Lys Phe Pro Val
225 230 235 240
Thr Ile Arg His Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly Pro Glu
245 250 255
Arg Lys Leu Arg Asn Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg
260 265 270
Pro His Lys Leu Met Ile Met Leu Arg Ser Ile Arg Glu Tyr Tyr Pro
275 280 285
Asp Leu Thr Val Ile Val Ala Asp Asp Ser Gln Lys Pro Leu Glu Ile
290 295 300
Lys Asp Asn His Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys Gly Trp
305 310 315 320
Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln Val Thr Thr Lys Tyr Val
325 330 335
Leu Trp Val Asp Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys Ile Glu
340 345 350
Val Leu Val Asp Val Leu Glu Lys Thr Glu Leu Asp Val Val Gly Gly
355 360 365
Ser Val Leu Gly Asn Val Phe Gln Phe Lys Leu Leu Leu Glu Gln Ser
370 375 380
Glu Asn Gly Ala Cys Leu His Lys Arg Met Gly Phe Phe Gln Pro Leu
385 390 395 400

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Asp Gly Phe Pro Ser Cys Val Val Thr Ser Gly Val Val Asn Phe Phe
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Gln Arg Val Ala His Ser Glu Phe Phe Ile Asp Gly Leu Gly Thr Leu
        435                 440                 445
Leu Val Gly Ser Cys Pro Glu Val Ile Ile Gly His Gln Ser Arg Ser
    450                 455                 460
Pro Val Val Asp Ser Glu Leu Ala Ala Leu Glu Lys Thr Tyr Asn Thr
465                 470                 475                 480
Tyr Arg Ser Asn Thr Leu Thr Arg Val Gln Phe Lys Leu Ala Leu His
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Tyr Phe Lys Asn His Leu Gln Cys Ala Ala
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<211> 399
<212> DNA
<213> Homo sapiens

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ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg     180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta     240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc     300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa     360
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<210> 4
<211> 132
<212> PRT
<213> Homo sapiens

<400> 4
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            20                  25                  30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
        35                  40                  45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
    50                  55                  60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
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Asp Gly Ile Trp
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<210> 5
<211> 219

<212> DNA
<213> Homo sapiens

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aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa 180
cgtctcagga acctcttttc ctacgatgga atctggtga 219

<210> 6
<211> 72
<212> PRT
<213> Homo sapiens

<400> 6
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Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
20 25 30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
35 40 45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
50 55 60
Leu Phe Ser Tyr Asp Gly Ile Trp
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<210> 7
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<212> DNA
<213> Homo sapiens

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ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg 180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta 240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc 300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa 360
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc 420
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat 480
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac 540
tttcagagga ggtaa 555

<210> 8
<211> 184
<212> PRT
<213> Homo sapiens

<400> 8
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20 25 30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
35 40 45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln

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    50                  55                  60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
        115                 120                 125
Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe Pro Lys Asn Gln
    130                 135                 140
Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp
145                 150                 155                 160
Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala
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Glu Phe Glu His Phe Gln Arg Arg
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<210> 9
<211> 372
<212> DNA
<213> Homo sapiens

<400> 9
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aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa     180
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc     240
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat     300
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac     360
tttcagagga gg                                                        372
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<210> 10
<211> 124
<212> PRT
<213> Homo sapiens

<400> 10
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Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
            20                  25                  30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
        35                  40                  45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60
Leu Phe Ser Tyr Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe
65                  70                  75                  80
Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr
                85                  90                  95
Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala
            100                 105                 110
Arg Arg Gln Ala Glu Phe Glu His Phe Gln Arg Arg
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<210> 11

<211> 537
<212> DNA
<213> Homo sapiens

<400> 11
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ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg 180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta 240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc 300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa 360
cgtctcagga acctcttttc ctacgatgga atctggctgt tcccgaaaaa tcagtgcaaa 420
tgtgaagcca acaaagagca gggaggttac aactttcagg atgcctatgg ccagagcgac 480
ctcccagcgg tgaaagcgag gagacaggct gaatttgaac actttcagag gaggtaa 537

<210> 12
<211> 182
<212> PRT
<213> Homo sapiens

<400> 12
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Val Glu Val Ala Ser Arg Gly Arg Glu Cys Val Ser Gly Thr Pro Glu
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Cys Gly Asn Arg Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu
35 40 45
Leu Arg Gly Ala Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg
50 55 60
Ser Arg Arg Gln Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val
65 70 75 80
Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
85 90 95
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
100 105 110
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
115 120 125
Leu Phe Ser Tyr Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys
130 135 140
Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr
145 150 155 160
Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe
165 170 175
Glu His Phe Gln Arg Arg
180

<210> 13
<211> 357
<212> DNA
<213> Homo sapiens

<400> 13
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aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa 180
cgtctcagga acctcttttc ctacgatgga atctggctgt tcccgaaaaa tcagtgcaaa 240

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tgtgaagcca acaaagagca gggaggttac aactttcagg atgcctatgg ccagagcgac     300
ctcccagcgg tgaaagcgag gagacaggct gaatttgaac actttcagag gaggtaa        357

<210> 14
<211> 118
<212> PRT
<213> Homo sapiens

<400> 14
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 1               5                  10                  15
Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
            20                  25                  30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
        35                  40                  45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60
Leu Phe Ser Tyr Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys
65                  70                  75                  80
Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr
                85                  90                  95
Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe
            100                 105                 110
Glu His Phe Gln Arg Arg
        115

<210> 15
<211> 1361
<212> DNA
<213> Homo sapiens

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ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg     180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta     240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc     300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa     360
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc     420
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat     480
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac     540
tttcagagga gagaagggct gccccgccca ctgcccctgc tggtccagcc caacctcccc     600
tttgggtacc cagtccacgg agtggaggtg atgcccctgc acacggttcc catcccaggc     660
ctccagtttg aaggacccga tgcccccgtc tatgaggtca ccctgacagc ttctctgggg     720
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ctgatcattt ctaccagtga ccggaagctg ttgaagttca ttcttcagca cgtgacatac     840
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ccagagagga agctcagaaa cctggttacc attgctacca agactttcct ccgcccccac    1020
aagctcatga tcatgctccg gagtattcga gagtattacc cagacttgac cgtaatagtg    1080
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tacgttctct gggtggacga tgattttctc ttcaacgagg agaccaagat tgaggtgctg    1260
gtggatgtcc tggagaaaac agaactggac gtggtaaggg acagttgcca gtttcaccca    1320
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<210> 16
<211> 453
<212> PRT
<213> Homo sapiens

<400> 16
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20 25 30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
35 40 45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
50 55 60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65 70 75 80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
85 90 95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
100 105 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
115 120 125
Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe Pro Lys Asn Gln
130 135 140
Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp
145 150 155 160
Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala
165 170 175
Glu Phe Glu His Phe Gln Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro
180 185 190
Leu Leu Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro Val His Gly Val
195 200 205
Glu Val Met Pro Leu His Thr Val Pro Ile Pro Gly Leu Gln Phe Glu
210 215 220
Gly Pro Asp Ala Pro Val Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly
225 230 235 240
Thr Leu Asn Thr Leu Ala Asp Val Pro Asp Ser Val Val Gln Gly Arg
245 250 255
Gly Gln Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys
260 265 270
Phe Ile Leu Gln His Val Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln
275 280 285
Lys Val Asp Ile Val Ser Leu Glu Ser Arg Ser Ser Val Ala Lys Phe
290 295 300
Pro Val Thr Ile Arg His Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly
305 310 315 320
Pro Glu Arg Lys Leu Arg Asn Leu Val Thr Ile Ala Thr Lys Thr Phe
325 330 335
Leu Arg Pro His Lys Leu Met Ile Met Leu Arg Ser Ile Arg Glu Tyr
340 345 350
Tyr Pro Asp Leu Thr Val Ile Val Ala Asp Asp Ser Gln Lys Pro Leu
355 360 365
Glu Ile Lys Asp Asn His Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys
370 375 380
Gly Trp Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln Val Thr Thr Lys
385 390 395 400

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Tyr Val Leu Trp Val Asp Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys
                405                 410                 415
Ile Glu Val Leu Val Asp Val Leu Glu Lys Thr Glu Leu Asp Val Val
            420                 425                 430
Arg Asp Ser Cys Gln Phe His Pro Ala Thr Ile Cys Arg Asp Gly Glu
        435                 440                 445
Glu Gly Arg Arg Glu
    450
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<210> 17
<211> 1181
<212> DNA
<213> Homo sapiens

<400> 17

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aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa     180
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc     240
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat     300
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac     360
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ctccagtttg aaggacccga tgcccccgtc tatgaggtca ccctgacagc ttctctgggg     540
acactgaaca cccttgctga tgtcccagac agtgtggtgc agggcagagg ccagaagcag     600
ctgatcattt ctaccagtga ccggaagctg ttgaagttca ttcttcagca cgtgacatac     660
accagcacgg ggtaccagca ccagaaggta gacatagtga gtctggagtc caggtcctca     720
gtggccaagt ttccagtgac catccgccat cctgtcatac ccaagctata cgaccctgga     780
ccagagagga agctcagaaa cctggttacc attgctacca agactttcct ccgcccccac     840
aagctcatga tcatgctccg gagtattcga gagtattacc cagacttgac cgtaatagtg     900
gctgatgaca gccagaagcc cctggaaatt aaagacaacc acgtggagta ttacactatg     960
ccctttggga agggttggtt tgctggtagg aacctggcca tatctcaggt caccaccaaa    1020
tacgttctct gggtggacga tgattttctc ttcaacgagg agaccaagat tgaggtgctg    1080
gtggatgtcc tggagaaaac agaactggac gtggtaaggg acagttgcca gtttcaccca    1140
gccacaatct gtagagatgg agaagagggg agaagagagc g                        1181
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<210> 18
<211> 393
<212> PRT
<213> Homo sapiens

<400> 18

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            20                  25                  30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
        35                  40                  45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60
Leu Phe Ser Tyr Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe
65                  70                  75                  80
Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr
                85                  90                  95
Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala
            100                 105                 110
```

```
Arg Arg Gln Ala Glu Phe Glu His Phe Gln Arg Arg Glu Gly Leu Pro
        115                 120                 125
Arg Pro Leu Pro Leu Leu Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro
    130                 135                 140
Val His Gly Val Glu Val Met Pro Leu His Thr Val Pro Ile Pro Gly
145                 150                 155                 160
Leu Gln Phe Glu Gly Pro Asp Ala Pro Val Tyr Glu Val Thr Leu Thr
                165                 170                 175
Ala Ser Leu Gly Thr Leu Asn Thr Leu Ala Asp Val Pro Asp Ser Val
            180                 185                 190
Val Gln Gly Arg Gly Gln Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg
        195                 200                 205
Lys Leu Leu Lys Phe Ile Leu Gln His Val Thr Tyr Thr Ser Thr Gly
    210                 215                 220
Tyr Gln His Gln Lys Val Asp Ile Val Ser Leu Glu Ser Arg Ser Ser
225                 230                 235                 240
Val Ala Lys Phe Pro Val Thr Ile Arg His Pro Val Ile Pro Lys Leu
                245                 250                 255
Tyr Asp Pro Gly Pro Glu Arg Lys Leu Arg Asn Leu Val Thr Ile Ala
            260                 265                 270
Thr Lys Thr Phe Leu Arg Pro His Lys Leu Met Ile Met Leu Arg Ser
        275                 280                 285
Ile Arg Glu Tyr Tyr Pro Asp Leu Thr Val Ile Val Ala Asp Asp Ser
    290                 295                 300
Gln Lys Pro Leu Glu Ile Lys Asp Asn His Val Glu Tyr Tyr Thr Met
305                 310                 315                 320
Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln
                325                 330                 335
Val Thr Thr Lys Tyr Val Leu Trp Val Asp Asp Asp Phe Leu Phe Asn
            340                 345                 350
Glu Glu Thr Lys Ile Glu Val Leu Val Asp Val Leu Glu Lys Thr Glu
        355                 360                 365
Leu Asp Val Val Arg Asp Ser Cys Gln Phe His Pro Ala Thr Ile Cys
    370                 375                 380
Arg Asp Gly Glu Glu Gly Arg Arg Glu
385                 390
```

<210> 19
<211> 1344
<212> DNA
<213> Homo sapiens

<400> 19

```
atggggagcg ctggcttttc cgtgggaaaa ttccacgtgg aggtggcctc tcgcggccgg     60
gaatgtgtct cggggacgcc cgagtgtggg aatcggctcg ggagtgcggg cttcggggat    120
ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg    180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta    240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc    300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa    360
cgtctcagga acctcttttc ctacgatgga atctggctgt tcccgaaaaa tcagtgcaaa    420
tgtgaagcca acaaagagca gggaggttac aactttcagg atgcctatgg ccagagcgac    480
ctcccagcgg tgaaagcgag gagacaggct gaatttgaac actttcagag gagagaaggg    540
ctgccccgcc cactgccccc gctggtccag cccaacctcc cctttgggta cccagtccac    600
ggagtggagg tgatgccccc gcacacggtt cccatcccag gcctccagtt tgaaggaccc    660
gatgcccccg tctatgaggt caccctgaca gcttctctgg ggacactgaa caccccttgct    720
gatgtcccag acagtgtggt gcagggcaga ggccagaagc agctgatcat ttctaccagt    780
```

```
gaccggaagc tgttgaagtt cattcttcag cacgtgacat acaccagcac ggggtaccag     840
caccagaagg tagacatagt gagtctggag tccaggtcct cagtggccaa gtttccagtg     900
accatccgcc atcctgtcat acccaagcta tacgaccctg gaccagagag gaagctcaga     960
aacctggtta ccattgctac caagactttc ctccgccccc acaagctcat gatcatgctc    1020
cggagtattc gagagtatta cccagacttg accgtaatag tggctgatga cagccagaag    1080
cccctggaaa ttaaagacaa ccacgtggag tattacacta tgccctttgg gaagggttgg    1140
tttgctggta ggaacctggc catatctcag gtcaccacca aatacgttct ctgggtggac    1200
gatgattttc tcttcaacga ggagaccaag attgaggtgc tggtggatgt cctggagaaa    1260
acagaactgg acgtggtaag ggacagttgc cagtttcacc cagccacaat ctgtagagat    1320
ggagaagagg ggagaagaga gcga                                           1344
```

<210> 20
<211> 448
<212> PRT
<213> Homo sapiens

<400> 20

```
Met Gly Ser Ala Gly Phe Ser Val Gly Lys Phe His Val Glu Val Ala
 1               5                  10                  15
Ser Arg Gly Arg Glu Cys Val Ser Gly Thr Pro Glu Cys Gly Asn Arg
            20                  25                  30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
        35                  40                  45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
    50                  55                  60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
        115                 120                 125
Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn
    130                 135                 140
Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp
145                 150                 155                 160
Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe Glu His Phe Gln
                165                 170                 175
Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro Leu Leu Val Gln Pro Asn
            180                 185                 190
Leu Pro Phe Gly Tyr Pro Val His Gly Val Glu Val Met Pro Leu His
        195                 200                 205
Thr Val Pro Ile Pro Gly Leu Gln Phe Glu Gly Pro Asp Ala Pro Val
    210                 215                 220
Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly Thr Leu Asn Thr Leu Ala
225                 230                 235                 240
Asp Val Pro Asp Ser Val Val Gln Gly Arg Gly Gln Lys Gln Leu Ile
                245                 250                 255
Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys Phe Ile Leu Gln His Val
            260                 265                 270
Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln Lys Val Asp Ile Val Ser
        275                 280                 285
Leu Glu Ser Arg Ser Ser Val Ala Lys Phe Pro Val Thr Ile Arg His
    290                 295                 300
Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly Pro Glu Arg Lys Leu Arg
```

```
305                 310                 315                 320
Asn Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg Pro His Lys Leu
                325                 330                 335
Met Ile Met Leu Arg Ser Ile Arg Glu Tyr Tyr Pro Asp Leu Thr Val
            340                 345                 350
Ile Val Ala Asp Asp Ser Gln Lys Pro Leu Glu Ile Lys Asp Asn His
        355                 360                 365
Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg
    370                 375                 380
Asn Leu Ala Ile Ser Gln Val Thr Thr Lys Tyr Val Leu Trp Val Asp
385                 390                 395                 400
Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys Ile Glu Val Leu Val Asp
                405                 410                 415
Val Leu Glu Lys Thr Glu Leu Asp Val Val Arg Asp Ser Cys Gln Phe
            420                 425                 430
His Pro Ala Thr Ile Cys Arg Asp Gly Glu Glu Gly Arg Arg Glu Arg
        435                 440                 445
```

<210> 21
<211> 1164
<212> DNA
<213> Homo sapiens

<400> 21

```
atgacttcgg gcggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta      60
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc     120
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa     180
cgtctcagga acctcttttc ctacgatgga atctggctgt tcccgaaaaa tcagtgcaaa     240
tgtgaagcca acaaagagca gggaggttac aactttcagg atgcctatgg ccagagcgac     300
ctcccagcgg tgaaagcgag gagacaggct gaatttgaac actttcagag gagagaaggg     360
ctgccccgcc cactgcccct gctggtccag cccaacctcc cctttgggta cccagtccac     420
ggagtggagg tgatgcccct gcacacggtt cccatcccag gcctccagtt tgaaggaccc     480
gatgcccccg tctatgaggt caccctgaca gcttctctgg ggacactgaa cacccttgct     540
gatgtcccag acagtgtggt gcagggcaga ggccagaagc agctgatcat ttctaccagt     600
gaccggaagc tgttgaagtt cattcttcag cacgtgacat acaccagcac ggggtaccag     660
caccagaagg tagacatagt gagtctggag tccaggtcct cagtggccaa gtttccagtg     720
accatccgcc atcctgtcat acccaagcta tacgaccctg gaccagagag gaagctcaga     780
aacctggtta ccattgctac caagactttc ctccgccccc acaagctcat gatcatgctc     840
cggagtattc gagagtatta cccagacttg accgtaatag tggctgatga cagccagaag     900
cccctggaaa ttaaagacaa ccacgtggag tattacacta tgccctttgg gaagggttgg     960
tttgctggta ggaacctggc catatctcag gtcaccacca aatacgttct ctgggtggac    1020
gatgattttc tcttcaacga ggagaccaag attgaggtgc tggtggatgt cctggagaaa    1080
acagaactgg acgtggtaag ggacagttgc cagtttcacc cagccacaat ctgtagagat    1140
ggagaagagg ggagaagaga gcga                                           1164
```

<210> 22
<211> 388
<212> PRT
<213> Homo sapiens

<400> 22

```
Met Thr Ser Gly Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val
 1               5                  10                  15
Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
            20                  25                  30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
```

```
        35                  40                  45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60
Leu Phe Ser Tyr Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys
65                  70                  75                  80
Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr
                85                  90                  95
Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe
            100                 105                 110
Glu His Phe Gln Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro Leu Leu
        115                 120                 125
Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro Val His Gly Val Glu Val
    130                 135                 140
Met Pro Leu His Thr Val Pro Ile Pro Gly Leu Gln Phe Glu Gly Pro
145                 150                 155                 160
Asp Ala Pro Val Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly Thr Leu
                165                 170                 175
Asn Thr Leu Ala Asp Val Pro Asp Ser Val Val Gln Gly Arg Gly Gln
            180                 185                 190
Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys Phe Ile
        195                 200                 205
Leu Gln His Val Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln Lys Val
    210                 215                 220
Asp Ile Val Ser Leu Glu Ser Arg Ser Ser Val Ala Lys Phe Pro Val
225                 230                 235                 240
Thr Ile Arg His Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly Pro Glu
                245                 250                 255
Arg Lys Leu Arg Asn Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg
            260                 265                 270
Pro His Lys Leu Met Ile Met Leu Arg Ser Ile Arg Glu Tyr Tyr Pro
        275                 280                 285
Asp Leu Thr Val Ile Val Ala Asp Asp Ser Gln Lys Pro Leu Glu Ile
    290                 295                 300
Lys Asp Asn His Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys Gly Trp
305                 310                 315                 320
Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln Val Thr Thr Lys Tyr Val
                325                 330                 335
Leu Trp Val Asp Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys Ile Glu
            340                 345                 350
Val Leu Val Asp Val Leu Glu Lys Thr Glu Leu Asp Val Val Arg Asp
        355                 360                 365
Ser Cys Gln Phe His Pro Ala Thr Ile Cys Arg Asp Gly Glu Glu Gly
    370                 375                 380
Arg Arg Glu Arg
385
```

<210> 23
<211> 549
<212> DNA
<213> Homo sapiens

<400> 23
atggggagcg ctggcttttc cgtgggaaaa ttccacgtgg aggtggcctc tcgcggccgg 60
gaatgtgtct cggggacgcc cgagtgtggg aatcggctcg ggagtgcggg cttcggggat 120
ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg 180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta 240

```
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc     300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa     360
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc     420
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat     480
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac     540
ccttgctga                                                            549

<210> 24
<211> 182
<212> PRT
<213> Homo sapiens

<400> 24
Met Gly Ser Ala Gly Phe Ser Val Gly Lys Phe His Val Glu Val Ala
 1               5                  10                  15
Ser Arg Gly Arg Glu Cys Val Ser Gly Thr Pro Glu Cys Gly Asn Arg
            20                  25                  30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
        35                  40                  45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
    50                  55                  60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
        115                 120                 125
Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe Pro Lys Asn Gln
    130                 135                 140
Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp
145                 150                 155                 160
Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala
                165                 170                 175
Glu Phe Glu His Pro Cys
            180

<210> 25
<211> 369
<212> DNA
<213> Homo sapiens

<400> 25
atgacttcgg gcggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta      60
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc     120
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa     180
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc     240
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat     300
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac     360
ccttgctga                                                            369

<210> 26
<211> 122
<212> PRT
<213> Homo sapiens
```

<400> 26
Met Thr Ser Gly Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val
 1               5                  10                  15
Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
            20                  25                  30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
        35                  40                  45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60
Leu Phe Ser Tyr Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe
65                  70                  75                  80
Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr
                85                  90                  95
Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala
            100                 105                 110
Arg Arg Gln Ala Glu Phe Glu His Pro Cys
        115                 120

<210> 27
<211> 531
<212> DNA
<213> Homo sapiens

<400> 27
atggggagcg ctggcttttc cgtgggaaaa ttccacgtgg aggtggcctc tcgcggccgg  60
gaatgtgtct cggggacgcc cgagtgtggg aatcggctcg ggagtgcggg cttcggggat  120
ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg  180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta  240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc  300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa  360
cgtctcagga acctcttttc ctacgatgga atctggctgt tcccgaaaaa tcagtgcaaa  420
tgtgaagcca acaaagagca gggaggttac aactttcagg atgcctatgg ccagagcgac  480
ctcccagcgg tgaaagcgag gagacaggct gaatttgaac acccttgctg a            531

<210> 28
<211> 176
<212> PRT
<213> Homo sapiens

<400> 28
Met Gly Ser Ala Gly Phe Ser Val Gly Lys Phe His Val Glu Val Ala
 1               5                  10                  15
Ser Arg Gly Arg Glu Cys Val Ser Gly Thr Pro Glu Cys Gly Asn Arg
            20                  25                  30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
        35                  40                  45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
    50                  55                  60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
        115                 120                 125

```
Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn
    130                 135                 140
Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp
145                 150                 155                 160
Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe Glu His Pro Cys
                165                 170                 175
```

<210> 29
<211> 351
<212> DNA
<213> Homo sapiens

<400> 29
atgacttcgg gcggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta 60
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc 120
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa 180
cgtctcagga acctcttttc ctacgatgga atctggctgt tcccgaaaaa tcagtgcaaa 240
tgtgaagcca acaaagagca gggaggttac aactttcagg atgcctatgg ccagagcgac 300
ctcccagcgg tgaaagcgag gagacaggct gaatttgaac acccttgctg a 351

<210> 30
<211> 116
<212> PRT
<213> Homo sapiens

<400> 30
```
Met Thr Ser Gly Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val
 1               5                  10                  15
Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
            20                  25                  30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
        35                  40                  45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60
Leu Phe Ser Tyr Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys
65                  70                  75                  80
Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr
                85                  90                  95
Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe
            100                 105                 110
Glu His Pro Cys
        115
```

<210> 31
<211> 1719
<212> DNA
<213> Homo sapiens

<400> 31
atggggagcg ctggcttttc cgtgggaaaa ttccacgtgg aggtggcctc tcgcggccgg 60
gaatgtgtct cggggacgcc cgagtgtggg aatcggctcg ggagtgcggg cttcggggat 120
ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg 180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta 240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc 300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa 360
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc 420

```
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat     480
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac     540
tttcagagga gagaagggct gccccgccca ctgcccctgc tggtccagcc caacctcccc     600
tttgggtacc cagtccacgg agtggaggtg atgcccctgc acacggttcc catcccaggc     660
ctccagtttg aaggacccga tgcccccgtc tatgaggtca ccctgacagc ttctctgggg     720
acactgaaca cccttgctga tgtcccagac agtgtggtgc agggcagagg ccagaagcag     780
ctgatcattt ctaccagtga ccggaagctg ttgaagttca ttcttcagca cgtgacatac     840
accagcacgg ggtaccagca ccagaaggta gacatagtga gtctggagtc caggtcctca     900
gtggccaagt ttccagtgac catccgccat cctgtcatac ccaagctata cgaccctgga     960
ccagagagga agctcagaaa cctggttacc attgctacca agactttcct ccgcccccac    1020
aagctcatga tcatgctccg gagtattcga gagtattacc cagacttgac cgtaatagtg    1080
gctgatgaca gccagaagcc cctggaaatt aaagacaacc acgtggagta ttacactatg    1140
ccctttggga agggttggtt tgctggtagg aacctggcca tatctcaggt caccaccaaa    1200
tacgttctct gggtggacga tgattttctc ttcaacgagg agaccaagat tgaggtgctg    1260
gtggatgtcc tggagaaaac agaactggac gtggtaggcg gcagtgtgct gggaaatgtg    1320
ttccagttta agttgttgct ggaacagagt gagaatgggg cctgccttca caagaggatg    1380
ggatttttcc aacccctgga tggcttcccc agctgcgtgg tgaccagtgg cgtggtcaac    1440
ttcttcctgg cccacacgga gcgactccaa agagttggct ttgatccccg cctgcaacga    1500
gtggctcact cagaattctt cattgatggg ctagggaccc tactcgtggg gtcatgccca    1560
gaagtgatta taggtcacca gtctcggtct ccagtggtgg actcagaact ggctgcccta    1620
gagaagacct acaatacata ccggtccaac accctcaccc gggtccagtt caagctggcc    1680
cttcactact tcaagaacca tctccaatgt gccgcataa                           1719
```

<210> 32
<211> 572
<212> PRT
<213> Homo sapiens

<400> 32

```
Met Gly Ser Ala Gly Phe Ser Val Gly Lys Phe His Val Glu Val Ala
 1               5                  10                  15
Ser Arg Gly Arg Glu Cys Val Ser Gly Thr Pro Glu Cys Gly Asn Arg
            20                  25                  30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
        35                  40                  45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
    50                  55                  60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
        115                 120                 125
Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe Pro Lys Asn Gln
    130                 135                 140
Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp
145                 150                 155                 160
Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala Arg Arg Gln Ala
                165                 170                 175
Glu Phe Glu His Phe Gln Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro
            180                 185                 190
Leu Leu Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro Val His Gly Val
        195                 200                 205
Glu Val Met Pro Leu His Thr Val Pro Ile Pro Gly Leu Gln Phe Glu
```

```
    210                 215                 220
Gly Pro Asp Ala Pro Val Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly
225                 230                 235                 240
Thr Leu Asn Thr Leu Ala Asp Val Pro Asp Ser Val Val Gln Gly Arg
                245                 250                 255
Gly Gln Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys
            260                 265                 270
Phe Ile Leu Gln His Val Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln
        275                 280                 285
Lys Val Asp Ile Val Ser Leu Glu Ser Arg Ser Ser Val Ala Lys Phe
    290                 295                 300
Pro Val Thr Ile Arg His Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly
305                 310                 315                 320
Pro Glu Arg Lys Leu Arg Asn Leu Val Thr Ile Ala Thr Lys Thr Phe
                325                 330                 335
Leu Arg Pro His Lys Leu Met Ile Met Leu Arg Ser Ile Arg Glu Tyr
            340                 345                 350
Tyr Pro Asp Leu Thr Val Ile Val Ala Asp Asp Ser Gln Lys Pro Leu
        355                 360                 365
Glu Ile Lys Asp Asn His Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys
    370                 375                 380
Gly Trp Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln Val Thr Thr Lys
385                 390                 395                 400
Tyr Val Leu Trp Val Asp Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys
                405                 410                 415
Ile Glu Val Leu Val Asp Val Leu Glu Lys Thr Glu Leu Asp Val Val
            420                 425                 430
Gly Gly Ser Val Leu Gly Asn Val Phe Gln Phe Lys Leu Leu Leu Glu
        435                 440                 445
Gln Ser Glu Asn Gly Ala Cys Leu His Lys Arg Met Gly Phe Phe Gln
    450                 455                 460
Pro Leu Asp Gly Phe Pro Ser Cys Val Val Thr Ser Gly Val Val Asn
465                 470                 475                 480
Phe Phe Leu Ala His Thr Glu Arg Leu Gln Arg Val Gly Phe Asp Pro
                485                 490                 495
Arg Leu Gln Arg Val Ala His Ser Glu Phe Phe Ile Asp Gly Leu Gly
            500                 505                 510
Thr Leu Leu Val Gly Ser Cys Pro Glu Val Ile Ile Gly His Gln Ser
        515                 520                 525
Arg Ser Pro Val Val Asp Ser Glu Leu Ala Ala Leu Glu Lys Thr Tyr
    530                 535                 540
Asn Thr Tyr Arg Ser Asn Thr Leu Thr Arg Val Gln Phe Lys Leu Ala
545                 550                 555                 560
Leu His Tyr Phe Lys Asn His Leu Gln Cys Ala Ala
                565                 570
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<210> 33
<211> 1539
<212> DNA
<213> Homo sapiens

<400> 33
atgacttcgg gcggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta 60
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc 120
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa 180
cgtctcagga acctcttttc ctacgatgga atctgtcctc ttgcttgttt caggctgttc 240

```
ccgaaaaatc agtgcaaatg tgaagccaac aaagagcagg gaggttacaa ctttcaggat     300
gcctatggcc agagcgacct cccagcggtg aaagcgagga gacaggctga atttgaacac     360
tttcagagga gagaagggct gccccgccca ctgcccctgc tggtccagcc caacctcccc     420
tttgggtacc cagtccacgg agtggaggtg atgcccctgc acacggttcc catcccaggc     480
ctccagtttg aaggacccga tgcccccgtc tatgaggtca ccctgacagc ttctctgggg     540
acactgaaca cccttgctga tgtcccagac agtgtggtgc agggcagagg ccagaagcag     600
ctgatcattt ctaccagtga ccggaagctg ttgaagttca ttcttcagca cgtgacatac     660
accagcacgg ggtaccagca ccagaaggta gacatagtga gtctggagtc caggtcctca     720
gtggccaagt ttccagtgac catccgccat cctgtcatac ccaagctata cgaccctgga     780
ccagagagga agctcagaaa cctggttacc attgctacca agactttcct ccgcccccac     840
aagctcatga tcatgctccg gagtattcga gagtattacc cagacttgac cgtaatagtg     900
gctgatgaca gccagaagcc cctggaaatt aaagacaacc acgtggagta ttacactatg     960
ccctttggga agggttggtt tgctggtagg aacctggcca tatctcaggt caccaccaaa    1020
tacgttctct gggtggacga tgattttctc ttcaacgagg agaccaagat tgaggtgctg    1080
gtggatgtcc tggagaaaac agaactggac gtggtaggcg gcagtgtgct gggaaatgtg    1140
ttccagttta agttgttgct ggaacagagt gagaatgggg cctgccttca caagaggatg    1200
ggatttttcc aacccctgga tggcttcccc agctgcgtgg tgaccagtgg cgtggtcaac    1260
ttcttcctgg cccacacgga gcgactccaa agagttggct ttgatccccg cctgcaacga    1320
gtggctcact cagaattctt cattgatggg ctagggaccc tactcgtggg gtcatgccca    1380
gaagtgatta taggtcacca gtctcggtct ccagtggtgg actcagaact ggctgcccta    1440
gagaagacct acaatacata ccggtccaac accctcaccc gggtccagtt caagctggcc    1500
cttcactact tcaagaacca tctccaatgt gccgcataa                           1539
```

<210> 34
<211> 512
<212> PRT
<213> Homo sapiens

<400> 34

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Met Thr Ser Gly Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val
 1               5                  10                  15
Ile Ile Leu Val Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe
            20                  25                  30
Leu Gln Ala Val Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala
        35                  40                  45
Pro Gly Val Gln Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn
    50                  55                  60
Leu Phe Ser Tyr Asp Gly Ile Cys Pro Leu Ala Cys Phe Arg Leu Phe
65                  70                  75                  80
Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn Lys Glu Gln Gly Gly Tyr
                85                  90                  95
Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp Leu Pro Ala Val Lys Ala
            100                 105                 110
Arg Arg Gln Ala Glu Phe Glu His Phe Gln Arg Arg Glu Gly Leu Pro
        115                 120                 125
Arg Pro Leu Pro Leu Leu Val Gln Pro Asn Leu Pro Phe Gly Tyr Pro
    130                 135                 140
Val His Gly Val Glu Val Met Pro Leu His Thr Val Pro Ile Pro Gly
145                 150                 155                 160
Leu Gln Phe Glu Gly Pro Asp Ala Pro Val Tyr Glu Val Thr Leu Thr
                165                 170                 175
Ala Ser Leu Gly Thr Leu Asn Thr Leu Ala Asp Val Pro Asp Ser Val
            180                 185                 190
Val Gln Gly Arg Gly Gln Lys Gln Leu Ile Ile Ser Thr Ser Asp Arg
        195                 200                 205
Lys Leu Leu Lys Phe Ile Leu Gln His Val Thr Tyr Thr Ser Thr Gly
```

```
    210                 215                 220
Tyr Gln His Gln Lys Val Asp Ile Val Ser Leu Glu Ser Arg Ser Ser
225                 230                 235                 240
Val Ala Lys Phe Pro Val Thr Ile Arg His Pro Val Ile Pro Lys Leu
                245                 250                 255
Tyr Asp Pro Gly Pro Glu Arg Lys Leu Arg Asn Leu Val Thr Ile Ala
            260                 265                 270
Thr Lys Thr Phe Leu Arg Pro His Lys Leu Met Ile Met Leu Arg Ser
        275                 280                 285
Ile Arg Glu Tyr Tyr Pro Asp Leu Thr Val Ile Val Ala Asp Asp Ser
    290                 295                 300
Gln Lys Pro Leu Glu Ile Lys Asp Asn His Val Glu Tyr Tyr Thr Met
305                 310                 315                 320
Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg Asn Leu Ala Ile Ser Gln
                325                 330                 335
Val Thr Thr Lys Tyr Val Leu Trp Val Asp Asp Asp Phe Leu Phe Asn
            340                 345                 350
Glu Glu Thr Lys Ile Glu Val Leu Val Asp Val Leu Glu Lys Thr Glu
        355                 360                 365
Leu Asp Val Val Gly Gly Ser Val Leu Gly Asn Val Phe Gln Phe Lys
    370                 375                 380
Leu Leu Leu Glu Gln Ser Glu Asn Gly Ala Cys Leu His Lys Arg Met
385                 390                 395                 400
Gly Phe Phe Gln Pro Leu Asp Gly Phe Pro Ser Cys Val Val Thr Ser
                405                 410                 415
Gly Val Val Asn Phe Phe Leu Ala His Thr Glu Arg Leu Gln Arg Val
            420                 425                 430
Gly Phe Asp Pro Arg Leu Gln Arg Val Ala His Ser Glu Phe Phe Ile
        435                 440                 445
Asp Gly Leu Gly Thr Leu Leu Val Gly Ser Cys Pro Glu Val Ile Ile
    450                 455                 460
Gly His Gln Ser Arg Ser Pro Val Val Asp Ser Glu Leu Ala Ala Leu
465                 470                 475                 480
Glu Lys Thr Tyr Asn Thr Tyr Arg Ser Asn Thr Leu Thr Arg Val Gln
                485                 490                 495
Phe Lys Leu Ala Leu His Tyr Phe Lys Asn His Leu Gln Cys Ala Ala
            500                 505                 510
```

<210> 35
<211> 1701
<212> DNA
<213> Homo sapiens

<400> 35

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gaatgtgtct cggggacgcc cgagtgtggg aatcggctcg ggagtgcggg cttcggggat    120
ctctgcttgg aactcagagg cgctgaccca gcctggggcc cgtttgctgc ccacgggagg    180
agccgccgtc agggctcgag atttctgtgg ctcctcaaga tattggtcat aatcctggta    240
cttggcattg ttggatttat gttcggaagc atgttccttc aagcagtgtt cagcagcccc    300
aagccagaac tcccaagtcc tgccccgggt gtccagaagc tgaagcttct gcctgaggaa    360
cgtctcagga acctcttttc ctacgatgga atctggctgt tcccgaaaaa tcagtgcaaa    420
tgtgaagcca acaaagagca gggaggttac aactttcagg atgcctatgg ccagagcgac    480
ctcccagcgg tgaaagcgag gagacaggct gaatttgaac actttcagag gagagaaggg    540
ctgccccgcc cactgcccct gctggtccag cccaacctcc cctttgggta cccagtccac    600
ggagtggagg tgatgcccct gcacacggtt cccatcccag gcctccagtt tgaaggaccc    660
gatgcccccg tctatgaggt caccctgaca gcttctctgg ggacactgaa caccttgct     720
```

```
gatgtcccag acagtgtggt gcagggcaga ggccagaagc agctgatcat ttctaccagt     780
gaccggaagc tgttgaagtt cattcttcag cacgtgacat acaccagcac ggggtaccag     840
caccagaagg tagacatagt gagtctggag tccaggtcct cagtggccaa gtttccagtg     900
accatccgcc atcctgtcat acccaagcta tacgaccctg gaccagagag gaagctcaga     960
aacctggtta ccattgctac caagactttc ctccgccccc acaagctcat gatcatgctc    1020
cggagtattc gagagtatta cccagacttg accgtaatag tggctgatga cagccagaag    1080
cccctggaaa ttaaagacaa ccacgtggag tattacacta tgccctttgg gaagggttgg    1140
tttgctggta ggaacctggc catatctcag gtcaccacca aatacgttct ctgggtggac    1200
gatgattttc tcttcaacga ggagaccaag attgaggtgc tggtggatgt cctggagaaa    1260
acagaactgg acgtggtagg cggcagtgtg ctgggaaatg tgttccagtt taagttgttg    1320
ctggaacaga gtgagaatgg ggcctgcctt cacaagagga tgggattttt ccaacccctg    1380
gatggcttcc ccagctgcgt ggtgaccagt ggcgtggtca acttcttcct ggcccacacg    1440
gagcgactcc aaagagttgg ctttgatccc cgcctgcaac gagtggctca ctcagaattc    1500
ttcattgatg ggctagggac cctactcgtg gggtcatgcc cagaagtgat tataggtcac    1560
cagtctcggt ctccagtggt ggactcagaa ctggctgccc tagagaagac ctacaataca    1620
taccggtcca acaccctcac ccgggtccag ttcaagctgg cccttcacta cttcaagaac    1680
catctccaat gtgccgcata a                                              1701

<210> 36
<211> 566
<212> PRT
<213> Homo sapiens

<400> 36
Met Gly Ser Ala Gly Phe Ser Val Gly Lys Phe His Val Glu Val Ala
 1               5                  10                  15
Ser Arg Gly Arg Glu Cys Val Ser Gly Thr Pro Glu Cys Gly Asn Arg
            20                  25                  30
Leu Gly Ser Ala Gly Phe Gly Asp Leu Cys Leu Glu Leu Arg Gly Ala
        35                  40                  45
Asp Pro Ala Trp Gly Pro Phe Ala Ala His Gly Arg Ser Arg Arg Gln
    50                  55                  60
Gly Ser Arg Phe Leu Trp Leu Leu Lys Ile Leu Val Ile Ile Leu Val
65                  70                  75                  80
Leu Gly Ile Val Gly Phe Met Phe Gly Ser Met Phe Leu Gln Ala Val
                85                  90                  95
Phe Ser Ser Pro Lys Pro Glu Leu Pro Ser Pro Ala Pro Gly Val Gln
            100                 105                 110
Lys Leu Lys Leu Leu Pro Glu Glu Arg Leu Arg Asn Leu Phe Ser Tyr
        115                 120                 125
Asp Gly Ile Trp Leu Phe Pro Lys Asn Gln Cys Lys Cys Glu Ala Asn
    130                 135                 140
Lys Glu Gln Gly Gly Tyr Asn Phe Gln Asp Ala Tyr Gly Gln Ser Asp
145                 150                 155                 160
Leu Pro Ala Val Lys Ala Arg Arg Gln Ala Glu Phe Glu His Phe Gln
                165                 170                 175
Arg Arg Glu Gly Leu Pro Arg Pro Leu Pro Leu Leu Val Gln Pro Asn
            180                 185                 190
Leu Pro Phe Gly Tyr Pro Val His Gly Val Glu Val Met Pro Leu His
        195                 200                 205
Thr Val Pro Ile Pro Gly Leu Gln Phe Glu Gly Pro Asp Ala Pro Val
    210                 215                 220
Tyr Glu Val Thr Leu Thr Ala Ser Leu Gly Thr Leu Asn Thr Leu Ala
225                 230                 235                 240
Asp Val Pro Asp Ser Val Val Gln Gly Arg Gly Gln Lys Gln Leu Ile
                245                 250                 255
```

```
Ile Ser Thr Ser Asp Arg Lys Leu Leu Lys Phe Ile Leu Gln His Val
            260                 265                 270
Thr Tyr Thr Ser Thr Gly Tyr Gln His Gln Lys Val Asp Ile Val Ser
        275                 280                 285
Leu Glu Ser Arg Ser Ser Val Ala Lys Phe Pro Val Thr Ile Arg His
    290                 295                 300
Pro Val Ile Pro Lys Leu Tyr Asp Pro Gly Pro Glu Arg Lys Leu Arg
305                 310                 315                 320
Asn Leu Val Thr Ile Ala Thr Lys Thr Phe Leu Arg Pro His Lys Leu
                325                 330                 335
Met Ile Met Leu Arg Ser Ile Arg Glu Tyr Tyr Pro Asp Leu Thr Val
            340                 345                 350
Ile Val Ala Asp Asp Ser Gln Lys Pro Leu Glu Ile Lys Asp Asn His
        355                 360                 365
Val Glu Tyr Tyr Thr Met Pro Phe Gly Lys Gly Trp Phe Ala Gly Arg
    370                 375                 380
Asn Leu Ala Ile Ser Gln Val Thr Thr Lys Tyr Val Leu Trp Val Asp
385                 390                 395                 400
Asp Asp Phe Leu Phe Asn Glu Glu Thr Lys Ile Glu Val Leu Val Asp
                405                 410                 415
Val Leu Glu Lys Thr Glu Leu Asp Val Val Gly Gly Ser Val Leu Gly
            420                 425                 430
Asn Val Phe Gln Phe Lys Leu Leu Leu Glu Gln Ser Glu Asn Gly Ala
        435                 440                 445
Cys Leu His Lys Arg Met Gly Phe Phe Gln Pro Leu Asp Gly Phe Pro
    450                 455                 460
Ser Cys Val Val Thr Ser Gly Val Val Asn Phe Phe Leu Ala His Thr
465                 470                 475                 480
Glu Arg Leu Gln Arg Val Gly Phe Asp Pro Arg Leu Gln Arg Val Ala
                485                 490                 495
His Ser Glu Phe Phe Ile Asp Gly Leu Gly Thr Leu Leu Val Gly Ser
            500                 505                 510
Cys Pro Glu Val Ile Ile Gly His Gln Ser Arg Ser Pro Val Val Asp
        515                 520                 525
Ser Glu Leu Ala Ala Leu Glu Lys Thr Tyr Asn Thr Tyr Arg Ser Asn
    530                 535                 540
Thr Leu Thr Arg Val Gln Phe Lys Leu Ala Leu His Tyr Phe Lys Asn
545                 550                 555                 560
His Leu Gln Cys Ala Ala
                565
```

<210> 37
<211> 3244
<212> DNA
<213> Homo sapiens

<400> 37

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ggcggcctgg ctgctaggct ccgtgacatc cggcagtctg agggcggcgg gattcgggat      60
gacttcgggc gggtgagtgt cctcggggca gagcaaaagc gagaggtgaa acttcgggag     120
cagggagcgc cgcgggtcct ttctggcgtc tgcagagcgg gcaggtgctg gggacgcaga     180
cgccggagcc agggagcggg cggttggagt cttaagtcca accggttccc cgcataggtg     240
gctgcagagg cgaggtgacg gcgcgtgcgg aacgaactct gcacccccag gaatggggag     300
cgctggcttt tccgtgggaa aattccacgt ggaggtggcc tctcgcggcc gggaatgtgt     360
ctcggggacg cccgagtgtg ggaatcggct cgggagtgcg ggcttcgggg atctctgctt     420
ggaactcaga ggcgctgacc cagcctgggg cccgtttgct gcccacggga ggagccgccg     480
tcagggctcg agatttctgt ggctcctcaa gatattggtc ataatcctgg tacttggcat     540
```

tgttggattt atgttcggaa gcatgttcct tcaagcagtg ttcagcagcc ccaagccaga 600
actcccaagt cctgccccgg gtgtccagaa gctgaagctt ctgcctgagg aacgtctcag 660
gaacctcttt tcctacgatg gaatctggtg agagactgcg tgttctttct ttcaccttaa 720
tgcacacatc ttccttgctc ctcctcaagt accatgccct actgtgccca ttgtaccgat 780
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aagaaggaat cgaggaaatc atccttaaat gaagatttac aaaactttgt atgtacaaaa 1560
catttcataa caacaacaac aacaacaaaa agctgggatt ggtgacacat gtctgtcatt 1620
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cact 3244